Serial No.: 10/043,849
Docket No.: UDC-20101

STATUS OF CLAIMS:

Claims 2-31 remain pending herein.

REMARKS

Rejection of Claims 2-18, 21-27 and 31 under 35 U.S.C. § 103(a)

Claims 2-18, 21-27 and 31 are presently rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 6,268,695 ("Affinito") and U.S. Patent Application No. 2001/0033135 A1 ("Duggal"). Applicants respectfully traverse these rejections and their supporting remarks.

In order to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a), there must be some suggestion or motivation to modify/combine the references of record, and (b) there must be a reasonable expectation of success. See MPEP §2143. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *Id.*

Claim 10, the only independent claim pending in the application, reads as follows:

> 10. An OLED device comprising:
> (a) a substrate;
> (b) an active region positioned over said substrate, wherein said active region comprises an anode layer, a cathode layer and a light-emitting layer disposed between the anode layer and the cathode layer; and
> (c) a composite barrier layer disposed over said active region or under said active region, said composite barrier layer comprising an alternating series of one or more polymeric planarizing sublayers and one or more high-density sublayers, at least one of said polymeric planarizing sublayers having microparticles incorporated therein, said microparticles being effective to increase the out-coupling efficiency of the OLED.

Affinito, cited in the Office Action, is directed to a device in which an OLED 160 is constructed over a flexible environmental barrier, specifically, a composite foundation 110. See, e.g., col. 2 line 54 to col. 3, line 13, Fig. 1 and col. 4, lines 7-10. The composite foundation 110 includes a substrate 150, a first polymer layer 132, a ceramic layer 134, and a second polymer layer 136. *Id.* (The foundation can further include an intermediate polymer layer 142 and an intermediate ceramic layer 144. See Fig. 2.) Such polymeric and ceramic layers have been shown to render a polymer substrate (i.e., a PET substrate) more than three orders of magnitude

less permeable to oxygen and water vapor than the case where a sole ceramic layer (i.e., oxide layer) is provided on the polymer substrate. Col. 1, lines 28-33.

In contrast to polymers, ceramic layers are known to be quite impermeable to oxygen. According to Affinito, in certain structures (e.g., oxide coated substrates), however, the oxide layer is believed to be prone to fracture, adversely affecting the barrier properties of the structure. See, e.g., col. 1, lines 43-67 of Affinito. The inclusion of polymer smoothing layers in these structures, however, is believed to cover various rough, sharp and/or uneven features, thereby protecting the oxide layer from fracture. *Id.*

According to the Office Action, it "would have been obvious to one of ordinary skill in the art at the time of the invention to modify the OLED disclosed by Affinito to have microparticles formed in a polymeric planarizing sublayer of the composite barrier layer in order to improve the out-coupling of the device by increasing the amount of scattered light, as taught by Duggal." (Emphasis added.) Applicant respectfully disagrees.

First, even assuming solely for the sake of argument that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the OLED disclosed by Affinito to have microparticles in order to improve the out-coupling of the device, there is no teaching or suggestion to place such microparticles *within a polymeric planarizing sublayer of a composite barrier layer*, as claimed in claim 10, for example, as opposed to placing the microparticles within a device layer that does not provide a planarizing function.

Indeed, it is respectfully submitted that one of ordinary skill in the art would actually have been dissuaded from providing microparticles within a polymeric planarizing sublayer of a composite barrier layer of Affinito. For example, as noted above, it is understood from Affinito that the function of the polymer smoothing layers is to cover various rough, sharp and/or uneven features that may be present, thereby protecting the adjacent oxide layers from fracture. Being aware of this, it is respectfully submitted that one of ordinary skill in the art would have been dissuaded from adding microparticles to polymer smoothing layers such as those of Affinito. This is true, for example, because adding solid particles to a layer whose function is to cover and smooth underlying features is antithetical to achieving that function.

The Office argues that Duggal "explicitly teaches that the polymer layer containing microparticles is not necessarily rough," but does not refer to the location within Duggal where this explicit statement is made. The Office also notes that the layer of Duggal "may 'contain

dimples or corrugations' shown in Figures 1 and 2 only 'if desired' (page 4, paragraph 0046)." However, this statement from Duggal refers to the deliberate introduction of surface contours at the *air interface* of the layer, and says nothing about the surface roughness of polymer layers containing microparticles.

For at least these reasons, it is respectfully submitted that claim 10 is patentable over Affinito and Duggal. Claims 2-9 and 11-31 depend from claim 10 and are therefore patentable for at least the same reasons as is claim 10.

Accordingly, reconsideration and withdrawal of the rejection of claims 2-18, 21-27 and 31 under 35 U.S.C. § 103(a) as obvious over Affinito and Duggal are respectfully requested.

Rejection of Claims 19 and 20 under 35 U.S.C. § 103(a)

Claims 19 and 20 are rejected under 35 U.S.C. § 103(a) as obvious over Affinito in view of Duggal and further in view U.S. Patent No. 6,339,289 (Fork). Applicant respectfully traverses this rejection and its supporting remarks.

For example, as noted above, claim 10 is unpatentable over Affinito and Duggal, at least because these references neither teach nor suggest placing microparticles *within a polymeric planarizing sublayer of a composite barrier layer*, as opposed to, for example, placing the microparticles within a device layer that is not required to also provide a planarizing function.

Fork, which is cited for its alleged disclosure of an OLED with pixels that are 300 microns across to prevent dark spots and improve imaging, does not make up for these deficiencies in Affinito and Duggal. For at least this reason, it is submitted that claim 10 is patentable over Affinito, Duggal and Fork.

Claims 19 and 20 depend from claim 10 and are therefore patentable over Affinito, Duggal and Fork for at least the same reasons as is claim 10.

Accordingly, reconsideration and withdrawal of the rejection of claims 19 and 20 under 35 U.S.C. § 103(a) as obvious over Affinito in view of Duggal and further in view of Fork are respectfully requested.

CONCLUSION

Applicant submits that all pending claims are in condition for allowance, early notification of which is earnestly solicited. Should the Examiner be of the view that an interview

would expedite the application at large, request is made that the Examiner telephone the Applicant's attorney at (703) 433-0510 in order to resolve any outstanding issues.

FEES

The Office is authorized to charge any fees required to deposit account number 50-1047.

Respectfully submitted,

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